PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

SERIES C. JOURNAL OF MEETINGS

VOLUME 25 No. 8, 1960

ORDINARY MEETING

WEDNESDAY, 7th DECEMBER, 1960, at 5.30 p.m. (Tea 5 p.m.)

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 2nd November, 1960.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 32].
6. Nomination of Officers and Council for 1961.
7. Admission of Fellows.
8. Papers accepted for publication in the *Transactions*.
9. Exhibits.
10. Communications.

1. Mr. F. Wilson

The biological control of insects.

A colour film, produced by the Commonwealth Scientific and Industrial Research Organisation, Canberra, illustrating the biological and procedural background to investigations on the biological control of insects.

2. Mr. W. H. Potts

The biology and control of Tsetse flies.

A film, taken by Dr. P. E. Glover and his colleagues of the Tsetse Control Sub-Department of the Veterinary Department of Kenya, illustrating some aspects of the biology of the Tsetse fly (*Glossina* spp.) and some of the methods used against it.

NOTICES

The next meeting will be held on *Wednesday, 18th January*, 1961.

(1) **Dr. E. A. G. Duffey** (a visitor).—Aims and achievements of reserve management at Wood Walton Fen.

(2) **Mr. M. V. Brian** (a visitor).—The use of Nature Reserves for research.

Proceedings of the Ordinary Meeting held on 2nd November, 1960

Dr. B. P. Uvarov, C.M.G., F.R.S., President, in the Chair.

Present, 87 Fellows and 27 Visitors.

The minutes of the meeting held on 5th October, 1960, were confirmed and signed by the President.

The names of the following candidates for election were read for the first time: Mr. Peter James Baker; Mr. Francis George Browne; Mr. Peter Thomas Cumming; Mr. Eric William Groves; Miss Valerie Healey, B.Sc.; Mr. Abdul Rashid Mir; Mr. Henry John Dickinson, B.Sc.; and Dr. Adrianus Berty Stam, Ph.D.

For the second time (taken as read): Mr. Richard Robinson Askew, B.Sc.; Mr. John Nafford Brady, B.A.; Dr. Moshe Calderon, M.Sc., Ph.D.; Mr. Michael John Cotton, B.Sc.; Mr. Patrick Stuart Dale; Mr. Kenneth Charles Durrant; Mr. Keith Murray Harris; Mr. Leonard Hill, B.Sc.; Mr. Ting-Huan Hsiao; Mr. David Jacques; Dr. Eugeniusz Judenko, Ph.D.; Mr. John Alexander MacGregor; Mr. Mohd Shafi Malik, B.A.; Dr. Gregory Joseph Peakin; Mr. Walter Petana; Mr. Ezekiel Rivnay; Dr. Basil John Shepstone, D.Sc.; Mr. Yow Cheong Siew, M.Sc.; and Mrs. Molly Thomas.

The Secretary read the names of the following newly elected Fellows of the Society: Mr. Douglas Stuart Anderson, B.Sc., 26A Goring Way, Greenford, Middlesex; Professor Robert Earl Lewis, American University of Beirut, Beirut, Lebanon; Mr. Max W. McFadden, University of Alberta, Edmonton, Alberta, Canada; Mr. George Murdie, Brunton Bridge Farm, Gosforth, Newcastle-upon-Tyne, 3; Mr. John Summerton, 81 Leeds Road, Tadcaster, Yorks; Mr. Saieduz Zafar Varcie, B.Sc., Chemafumes Private Ltd., 17 Horniman Circle, Fort, Bombay, India; Mr. John Charles Watt, University of Auckland, P.O. Box 2175, Auckland, C.1, New Zealand; Mr. John Dunell Handman, P.O. Box 492, Limbe, Nyasaland; and Dr. Lewis J. Stannard, Illinois Natural History Survey, Urbana, Illinois, U.S.A.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. G. Murdie and Mr. C. Wilkinson signed the Obligation Book and were admitted Fellows of the Society.

The Hon. Miriam Rothschild and **Mr. P. Feeny** (a visitor) gave a paper on the investigation of the warning scents of insects by gas chromatography, an abstract of which appeared on page 25.

The discussion which followed was opened by the President who said that the method described was presumably equally applicable to repellent and attractant smells. The latter play some part in mating behaviour and he wondered if these smells were differently constituted.

Miss Rothschild said the chemistry of attractant smells was rather more complicated; they were being investigated by Dr. Kettlewell, who was specialising in this aspect of the work. Mr. Feeny added that the constituents of long range attractants were probably less volatile. The technique for their investigation was basically similar and an attempt was being made to adapt the apparatus to work at the higher temperature necessary to analyse them.

Dr. B. J. McNulty referred to the work of a colleague who was able to detect down to 10^{-18} gr. of a substance using infra-red spectra, which also gave a good indication of the identity of the substance.

Dr. R. K. Callow, F.R.S. (a visitor) and Miss Rothschild commented on certain limiting factors, especially the difficulty of obtaining dehydrated material in sufficient quantity for use with infra-red spectroscopy.

Dr. J. D. Carthy said Miss Rothschild had drawn a comparison between the recognition of colour patterns and the recognition of scent patterns. It would be interesting to see whether any one component of these scent patterns was overwhelmingly important, as had been shown with many of the visual patterns. Miss Rothschild agreed that this would be an interesting field for research.

Mr. L. P. Lefkovitch having enquired the effect of subjecting moths to dry air for some five hours, Mr. Feeny replied that they seemed unaffected and flew away normally.

Mr. M. E. Solomon asked if the reaction of any predator to the substances had been studied, and Mr. Feeny replied that too little of the substances was available to extend the investigations this far.

Dr. McNulty said that predators would not be affected by individual substances but only by the combination and its characteristic scent, a view which was supported by Dr. D. L. Gunn.

In reply to an enquiry as to whether the chemical composition of the substances was affected by being passed through the high temperature, Mr. Feeny emphasised that at room temperature no alteration in the nature of the chemical substances would be expected but that at high temperatures heat sensitive compounds might break down during passage through the column.

Professor G. C. Varley and **Mr. G. R. Gradwell** gave a paper on the effect of pupal parasites and predators on the winter moth, *Operophtera brumata* (L.), an abstract of which appeared on pages 25 and 26.

In the discussion which followed, Professor O. W. Richards asked if any information was available on the relative timing of carabid beetle predation and attack by the ichneumon parasite, *Cratichneumon culex* (Mueller).

Professor Varley replied that they had assumed for the purpose of calculating k values that the *Cratichneumon* acted before the predators ; but the former had more than one generation a year and therefore attacked right through the summer, whereas predation by beetles was concentrated in the early summer.

Dr. N. Waloff asked if the death rate, other than by parasitism, was attributed only to predation or was there some other factor ? Professor Varley replied that there were other factors but it was very difficult to isolate them. In their work, starting with the raw census information, the two counts a year provided estimates of mortality over two periods. Some specified causes could be estimated separately (*e.g.* parasitism) and subtracted, leaving a residue due to many causes. There was evidence that early mortality was greater on certain trees and was related to leaf opening time, which was itself dependent on the weather. Synchronisation of bud bursting with egg hatching in a particular year could cause country-wide outbreaks.

Professor R. H. Painter (a visitor) asked if any information was available on the differences between particular trees on which the insects had fed and which might affect the size of the populations. Professor Varley replied that they did not yet know of any chemical differences between the trees ; the tannin concentration was, however, being investigated with the help of paper chromatography. He added that the trees studied always opened in the same sequence although the exact date might vary from year to year.

Mr. Solomon asked if there was any correlation between the total juvenile mortality in the whole year and the previous year's population. Mr. Gradwell replied that the correlation was between the total population of all caterpillars on the trees and the mortality suffered by the larvae of the moth in the following year ; the higher the population of all species, the greater the early stage mortality the following year. The possibility that the damage to the tree caused it to open late in the following year was being tested.

Mr. Lefkovitch asked if the observations were based on the assumption that the oviposition rate was constant, to which Professor Varley replied that this was so. The number of ovarian eggs varied very little, but it was not possible to measure the number actually laid. There was probably no competition for oviposition sites.

Dr. McNulty asked if all females had the same opportunity of becoming fertile and Professor Varley thought there was no easy means of finding this out.

PAUL FREEMAN, *Honorary Secretary.*

ADDITIONS TO THE LIBRARY

Presented

British Museum (Natural History). *A monograph of the immature stages of the neotropical timber beetles* (Cerambycidae). By E. A. J. Duffy. 4to. London, 1960. [The Trustees of the British Museum.]

Jeannel, R. *Introduction to Entomology.* Translated by H. Oldroyd. 8vo. London : Hutchinson, 1960. [The Publishers.]

Purchased

Bachofen-Echt, A. *Der Bernstein und seine Einschlüsse.* 8vo. Wien : Springer-Verlag, 1949.

Ebeling, W. *Subtropical fruit pests.* 4to. University of California, 1959.

Gisin, H. *Collembolenfauna Europas.* 8vo. Geneva : Mus. hist. Nat., 1960.

Faune de France. 64. Isopodes terrestres. 1ère partie. By A. Vandel. 8vo. Paris : Lechevalier, 1960.

Johansson, A. S. *Relation of nutrition to endocrine reproductive functions in the Milkweed Bug* Oncopeltus fasciatus (*Dallas*) (*Heteroptera* : *Lygaeidae*). [Nytt Magasin for Zoologi, Vol. 7.]

Sellier, R. *Les insectes utiles.* 8vo. Paris : Payot, 1959.

Stichel, W. *Illustrierte Bestimmungstabellen der Wanzen.* II. *Europa* (*Hemiptera-Heteroptera*). Vol. 3, Hft. 13/14. Vol. 4, Hft. 15–16. 8vo. Berlin-Hermsdorf, 1960.

Stone, A., Knight, K. L. and Starcke, H. *A synoptic catalog of the mosquitoes of the world* (*Dipt. Culicidae*). 8vo. Entomological Society of America, 1959.

In addition separates have been presented by Dr. A. Willinck ; Dr. A. M. Massee ; Dr. C. Gregoire ; Dr. W. J. Le Quesne ; American Entomological Society ; Dr. E. N. Marks ; Mr. A. E. Gardner ; United States Department of Agriculture ; Commonwealth Institute of Entomology ; Professor J. L. Cloudsley-Thompson ; Dr. D. F. Poulson ; United States National Museum ; Mr. D. Boocock ; Dr. C. A. Clarke ; Mr. B. D. Smith ; Dr. S. Lloyd ; Mr. A. W. McKenny-Hughes ; Laboratorium voor Entomologie, Wageningen ; Dr. L. Broadbent ; Polish Academy of Sciences ; Mr. F. G. Sarel Whitfield and Mr. R. L. Edwards.

PRINTED BY ADLARD AND SON, LIMITED, BARTHOLOMEW PRESS, DORKING.